



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 Sixth Avenue
Seattle, WA 98101

October 7, 2005

Reply to
Attn Of: AWT-121

Certified Mail – Return Receipt Requested

Mr. Will Ernst
Company Energy and Environmental Affairs
The Boeing Company
P.O. Box 3707
MC 1W-12
Seattle, WA 98124-2207

**Re: Phase II Transformer PCB Investigation Report
Boeing Plant 2 Seattle/Tukwila, Washington
EPA ID No. WAD 00925 6819
RCRA Docket No. 1092-01-22-3008(h)**

FILE COPY

Dear Mr. Ernst:

The U.S. Environmental Protection Agency (EPA) has reviewed the August 3, 2005 document entitled *Phase II Transformer PCB Investigation Report* (Phase II Report). EPA is not requiring The Boeing Company (Boeing) to revise the Phase II Report. However, the attached comments must be adequately addressed in the upcoming revision of the Alternative Corrective Measures Evaluation Report (ACMER) and/or completion of the Corrective Measures Study (CMS) for the Plant 2 upland.

If you have any questions, please call me at (206)553-2851 or email at Orlean.Howard@epa.gov.

Sincerely,

Howard Orlean
Project Manager

cc: Peter Jewitt, Farallon Consulting
David Templeton, Anchor Consulting
Michael Gleason, Boeing
Hideo Fujita, Ecology NWRO
Brad Helland, Ecology NWRO
Richard Thomas, Ecology NWRO
Glen St. Amant, Muckleshoot Tribe
Marla Steinhoff, NOAA

USEPA RCRA



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General Comments

1. EPA generally agrees that sufficient data have been collected to evaluate nature and extent of polychlorinated biphenyl (PCB) contamination in soil and groundwater surrounding the "Area of Discovery." Based on the findings of the Phase II Transformer PCB investigation results, Boeing should proceed to propose corrective measures regarding residual soil contaminations at the site. Even though the site is paved, access is controlled, and the manhole SDMH 36-83 has been plugged, neither asphalt nor concrete are impermeable. PCB-contaminated soil under the pavement must be removed to eliminate PCB-transport pathways to the Duwamish Waterway.
2. Hydraulic monitoring of the Phase II Transformer PCB Investigation was still inadequate, therefore the data interpretation (Figure 3.5) is at best only marginally improved from the Phase I results due to lack of control data points. It is unclear why the new monitoring wells PL2-JF04A and PL2-06AR were not included in the hydraulic monitoring network during the Phase II field investigation. One of the primary objectives of installing new wells was to more accurately characterize groundwater flow directions (see Section 4.2.2 of the Phase II Transformer PCB Investigation Work Plan). If wells PL2-JF04A and PL2-06AR had been monitored for mean groundwater levels during the Phase II field investigation, Figure 3.5 would substantially better define groundwater flow directions and gradient downgradient of the Area of Discovery. EPA therefore rejects the use of inadequately supported water level contours as presented in this report for decision-making. The ACMER and the CMS must use all necessary groundwater monitoring wells to more accurately define groundwater flow beneath the Plant 2/Jorgensen Forge property boundary.
3. EPA agrees with the stated conclusions of historical PCB transport, and analyses of data regarding the extent (horizontal and vertical) of PCB contamination. Based on the findings of the Phase II Report, it doesn't appear that PCBs are currently being transported via groundwater. However, given that soil concentrations of PCBs below the water table are elevated, there should be future monitoring of wells downgradient of the transformer site for PCBs. Groundwater monitoring must occur until the source soil is removed.
4. Based on the Phase II investigation results, migration of PCB contamination from the Area of Discovery is not likely associated with non-aqueous phase liquids (NAPLs) currently. Similarly, multiple releases and sources of NAPLs at the vicinity of the site are not likely a continuing transport mechanism for PCBs to the Waterway. However, EPA is concerned that PCBs may have migrated and spread historically from the points of releases to the current 140-by-70 foot area via light non-aqueous phase liquids (LNAPLs). While a continuing floating product was not presently observable above the water table, the extent of PCB soil contamination from 8 to 14 feet below ground surface (bgs), a shift westward from the Area of Discovery, indicates that a historical smear zone may exist downgradient of the original release points. The CMS must therefore include an evaluation of alternatives to monitor and if necessary remediate PCBs within this area.

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Will Ernst / Boeing
Phase 2 Transformer

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REGION 10: M/S AWT-121

1200 SIXTH AVENUE

SEATTLE, WA 98101

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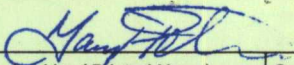
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THE BOEING COMPANY
P.O. BOX 3707
MC 1W-12
SEATTLE, WA 98124-2207

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Specific Comments

1. Section 1.2.3, page 1-3, second paragraph of the section

PCBs detected in the Southwest Bank (SW Bank) area may not have migrated from the transformer Area of Discovery. However it is still unclear whether PCBs which may have originated in the bank debris have spread or penetrated into subsurface fill and native soil layers. The vertical extent of PCBs along some transects of the SW Bank remains to be fully characterized through the final design stage.

2. Section 2.1, page 2-2

The replacement well PL2-006AR and new monitoring well PL2-JF004A should be part of hydraulic monitoring to fully characterize groundwater flow direction and hydraulic gradient downgradient of the Area of Discovery. At this stage, groundwater flow direction may be less critical because PCBs were not detected in any of groundwater samples at concentrations above 0.065 µg/L. However, Boeing should acknowledge this data gap, and the detailed groundwater flow characterization must be addressed through the upland CMS 2-66 Area Data Gap Investigation

3. Section 3.2.1, page 3-2, third paragraph

EPA does not agree with the portion of the last sentence that states: "...and (2) the well being screened across a soil zone with elevated PCB concentrations" because this is not the primary reason for biased groundwater PCB results. The replacement wells were also screened in the same vadose zone and saturated intervals with elevated PCB concentrations. Because the new wells were properly constructed, groundwater samples from the new wells are not biased.

4. Section 3.2.1, page 3-2, fourth paragraph

The text states that PCBs were not detected in any of the four soil borings located near or within the sheetpile. This statement is inconsistent with Table 3.2 and Section 2.4.1. Only one groundwater sample was collected in Geoprobe soil boring (SB-07560) according Table 3.2 and Section 2.4.1. This discrepancy must be resolved.

5. Section 3.2.2, Page 3-2

EPA is not clear as to how the wells were chosen that water levels were measured in. For example EPA does not know why wells PL2-JF04A and PL2-006AR were not measured. The CMS must include an evaluation of water levels which were measured in all wells.

6. Section 3.2.2, page 3-2, last bullet and page 3-3, first paragraph

The groundwater contour map generated for the South Yard Data Gap Investigation is not detailed enough to meet objective #1 for the Transformer PCB Investigation because of lack of control points at the Area of Discovery. Consequently, Boeing's conclusion that

there is no southern component to groundwater flow at the substation pad area (stated in the paragraph following the bullets) is not supported. The hydrogeologic regime characterization must be refined and corrected in the 2-66 Area CMS Data Gap Investigation.

7. Section 4.2, pages 4-1 and 4-2

No subsurface soil samples were taken directly beneath the existing transformer. This remains a data gap which must be addressed during the CMS.

8. Page 4-3, Section 4.4

Boeing should describe the correlation of ground water levels below ground surface (bgs) with PCB sample depths. Include the fact that although PCBs are detected above 1000 ug/kg below the water table, ground water samples show no PCB detections.

9. Section 4.4.1, page 4-3, last paragraph

EPA agrees that if no free-phase LNAPLs are present in the vicinity of the Area of Discovery, it is unlikely that PCBs are currently being transported through LNAPLs. However, the current soil sampling results indicated that elevated PCB concentrations (over 1,000 µg/kg) were spread in a 140-by-70 foot area. This strongly suggests that there were PCB migrations through a certain type of liquid historically from the points of releases or spills. The CMS must include a discussion of the connection between PCBs and total petroleum hydrocarbons (TPHs). Historical PCB migrations through LNAPL must also be addressed in the CMS.

10. Section, 4.5, page 4-4

The large variations in PCB concentrations found within the storm system solids could be partly due to tidal fluctuations within the storm drains. Where appropriate, the ACMER and CMS should include a discussion on the potential impact of tidal fluctuations on the distribution of storm drain solids.

11. Section 5.0, page 5-1, second bullet

Groundwater flow directions and gradients are not adequately characterized, as discussed above (comments #2 and 6). This remains a data gap, which must be filled through the CMS data gap investigations.

12. Section 5.0, page 5-1, fourth bullet

The facts that the site is paved and access is controlled may not prevent contaminated soil from spreading and leaching to groundwater because no pavement is impermeable. A soil remedy must be evaluated as part of the CMS.



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Sincerely,

Howard Orlean
Project Manager**CONCURRENCES:**

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